1. A substantially pure ABC1 polypeptide having ABC1 biological activity.

2. The substantially pure ABC1 polypeptide of claim 1, wherein said ABC1 polypeptide is human ABC1.

3. The substantially pure ABC1 polypeptide of claim 1, wherein said polypeptide comprises amino acids 1 to 60 of SEQ ID NO: 1.

4. The substantially pure ABC1 polypeptide of claim 1, wherein said polypeptide comprises amino acids 61 to 2261 of SEQ ID NO: 1.

5. The substantially pure ABC1 polypeptide of claim 1, wherein said polypeptide comprises amino acids 1 to 2261 of SEQ ID NO: 1.

6. A substantially pure ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1.

7. A substantially pure ABC1 polypeptide comprising amino acids 61 to 2261 of SEQ ID NO: 1.

8. A substantially pure ABC1 polypeptide comprising amino acids 1 to 2261 of SEQ ID NO: 1.

9. A substantially pure nucleic acid molecule that hybridizes at high stringency conditions to nucleotides 75 to 254 of SEQ ID NO: 2 and encodes a

polypeptide having ABC1 biological activity.

10. A substantially pure nucleic acid molecule encoding an ABC1 polypeptide having ABC1 biological activity.

11. The substantially pure nucleic acid molecule of claim 9 or 10, wherein said nucleic acid molecule comprises nucleotides 75 to 254 of SEQ ID NO: 2.

12. The substantially pure nucleic acid molecule of claim 9 or 10, wherein said nucleic acid molecule comprises nucleotides 255 to 6857 of SEQ ID NO: 2.

13. The substantially pure nucleic acid molecule of claim 9 or 10, wherein said nucleic acid molecule comprises nucleotides 75 to 6857 of SEQ ID NO: 2.

14. An expression vector comprising the nucleic acid molecule of claim 9.

15. A cell expressing the nucleic acid molecule of claim 9.

16. A non-human mammal expressing the nucleic acid molecule of claim 9.

17. A substantially pure nucleic acid molecule comprising nucleotides 75 to 254 of SEQ ID NO: 2.

18. A substantially pure nucleic acid molecule comprising nucleotides 255 to 6857 of SEQ ID NO: 2.

19. A substantially pure nucleic acid molecule comprising nucleotides 75 to 6857 of SEQ ID NO: 2.

20. A substantially pure nucleic acid molecule comprising at least thirty consecutive nucleotides corresponding to nucleotides 7015-7860 of SEQ ID NO: 2.

21. The substantially pure nucleic acid molecule of claim 20, wherein said nucleic acid molecule comprises nucleotides 7015-7860 of SEQ ID NO: 2.

22. A substantially pure nucleic acid molecule that hybridizes at high stringency to a probe comprising nucleotides 7015-7860 of SEQ ID NO: 2.

23. A method of treating a human having low HDL cholesterol or cardiovascular disease, said method comprising administering to said human an ABC1 polypeptide, or cholesterol-regulating fragment thereof.

24. The method of claim 23, wherein said ABC1 polypeptide has the sequence of SEQ ID NO: 1.

25. The method of claim 23, wherein said ABC1 polypeptide comprises a mutation that increases its stability.

26. The method of claim 23, wherein said ABC1 polypeptide comprises a mutation that increases its biological activity.

27. A method of treating a human having low HDL cholesterol or cardiovascular disease, said method comprising administering to said human a nucleic acid molecule encoding an ABC1 polypeptide or a cholesterol-regulating fragment thereof.

28. The method of claim 27, wherein said ABC1 polypeptide has the amino acid sequence of SEQ ID NO: 1.

29. The method of claim 27, wherein said ABC1 polypeptide comprises a mutation that increases its stability.

30. The method of claim 27, wherein said ABC1 polypeptide comprises a mutation that increases its biological activity.

31. The method of claim 30, wherein said biological activity is regulation of cholesterol.

32. The method of claim 27, wherein said human has low HDL cholesterol levels relative to normal.

33. A method of increasing ABC1 biological activity in a human, said method comprising administering to said human a nucleic acid molecule that hybridizes at high stringency conditions to nucleotides 75 to 254 of SEQ ID NO: 2 and encodes a polypeptide having ABC1 biological activity.

34. The method of claim 33, wherein said human has a disease selected from the group consisting of Alzheimer's disease, Niemann-Pick disease, Huntington's disease, x-linked adrenoleukodystrophy, and cancer.

35. A method of increasing ABC1 biological activity in a human, said method comprising administering to said human a compound that increases ABC1 biological activity.

36. The method of claim 35, wherein said human has a disease selected from the group consisting of Alzheimer's disease, Niemann-Pick disease, Huntington's disease, x-linked adrenoleukodystrophy, and cancer.

37. A method of preventing cardiovascular disease in a human, said method comprising administering to said human an expression vector comprising an *ABC1* nucleic acid molecule operably linked to a promoter, said *ABC1* nucleic acid molecule encoding an ABC1 polypeptide having ABC1 biological activity.

38. A method of preventing or ameliorating the effects of a disease-causing mutation in an *ABC1* gene in a human, said method comprising introducing into said human an expression vector comprising a promoter operably linked to an *ABC1* nucleic acid molecule encoding an ABC1 polypeptide having ABC1 biological activity.

39. A method of treating or preventing cardiovascular disease in an animal, said method comprising administering to said animal a compound that

mimics the activity of wild-type ABC1.

40. The method of claim 39, wherein said animal is a human.

41. A method of treating or preventing cardiovascular disease in an animal, said method comprising administering to said animal a compound that modulates the biological activity of ABC1.

42. The method of claim 41, wherein said animal is a human.

43. The method of claim 41, wherein said compound is selected from a group consisting of protein kinase A, protein kinase C, vanadate, okadaic acid, IBMX1, fibrates, β-estradiol, arachidonic acid derivatives, WY-14,643, LTB4, 8(s)HETE, thiozolidinedione antidiabetic drugs, 9-HODE, 13-HODE, nicotinic acid, HMG CoA reductase inhibitors, and compounds that increase PPAR-mediated ABC1 expression.

44. The method of claim 23, 27, 39, or 41, wherein said cardiovascular disease is coronary artery disease, cerebrovascular disease, coronary restenosis, or peripheral vascular disease.

45. A method for determining whether a candidate compound is useful for modulating cholesterol levels, said method comprising the steps of:

(a) providing a chicken comprising a mutation in an *ABC1* gene;

(b) administering said candidate compound to said chicken; and

(c) measuring ABC1 biological activity in said chicken,

wherein altered ABC1 biological activity, relative to a WHAM chicken not contacted with said compound, indicates that said candidate compound modulates cholesterol levels.

46. The method of claim 45, wherein said ABC1 biological activity is transport of cholesterol.

47. A method for determining whether a candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing a cell expressing an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1;

(b) contacting said cell with said candidate compound; and

(c) measuring ABC1 biological activity of said cell,

wherein altered ABC1 biological activity, relative to a cell not contacted with said compound, indicates that said candidate compound modulates ABC1 biological activity.

48. A method for determining whether a candidate compound modulates ABC1 expression, said method comprising the steps of:

(a) providing a cell expressing an *ABC1* gene comprising nucleotides 75 to 254 of SEQ ID NO: 2;

(b) contacting said cell with said candidate compound; and

(c) measuring ABC1 expression of said cell,

wherein altered ABC1 expression, relative to a cell not contacted with said

compound, indicates that said candidate compound modulates ABC1 expression.

49. A method for determining whether a candidate compound modulates ABC1 expression, said method comprising the steps of:

(a) providing a nucleic acid molecule comprising an ABC1 promoter operably linked to a reporter gene;

(b) contacting said nucleic acid molecule with said candidate compound; and

(c) measuring expression of said reporter gene,

wherein altered reporter gene expression, relative to a control not contacted with said compound, indicates that said candidate compound modulates ABC1 expression.

50. The method of claim 49, wherein said promoter comprises 50 consecutive nucleotides selected from nucleotides 1 to 8238 of SEQ ID NO: 14.

51. The method of claim 50, wherein said promoter comprises a binding site for a transcription factor selected from a group consisting of steroid response element binding proteins, peroxisomal proliferation-activated receptors, retinoid X receptors, and RAR-related orphan receptors.

52. A method for determining whether a candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1;

(b) contacting said polypeptide with said candidate compound; and

(c) measuring ABC1 biological activity,

wherein a change in ABC1 biological activity, relative to a control not contacted with said compound, indicates that said candidate compound modulates ABC1 biological activity.

53. A method for determining whether a candidate compound modulates ABC1 expression, said method comprising the steps of:

(a) providing an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1;

(b) contacting said polypeptide with said candidate compound; and

(c) measuring expression of said ABC1 polypeptide,

wherein a change in expression of said ABC1 polypeptide, relative to a control not contacted with said compound, indicates that said candidate compound modulates ABC1 expression.

54. A method for determining whether candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1;

(b) contacting said polypeptide with said candidate compound; and

(c) measuring binding of said ABC1 polypeptide to said candidate compound, wherein binding of said ABC1 polypeptide to said compound indicates that said candidate compound modulates ABC1 biological activity.

55. A method for determining whether candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing (i) an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1, and (ii) a second polypeptide that interacts with said ABC1 polypeptide;

(b) contacting said polypeptides with said candidate compound; and

(c) measuring interaction of said ABC1 polypeptide with said second polypeptide, wherein an alteration in the interaction of said ABC1 polypeptide with said second polypeptide indicates that said candidate compound modulates ABC1 biological activity.

56. A method for determining whether a candidate compound increases the stability or decreases the regulated catabolism of an ABC1 polypeptide, said method comprising the steps of:

(a) providing a cell comprising an ABC1 polypeptide comprising amino acids 1 to 60 of SEQ ID NO: 1;

(b) contacting said cell with said candidate compound; and

(c) measuring the half-life of said ABC1 polypeptide,

wherein an increase in said half-life, relative to a control not contacted with said compound, indicates that said candidate compound increases the stability or decreases the regulated catabolism of an ABC1 polypeptide.

57. A method for determining whether a candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing an ABC1 polypeptide in a lipid membrane;

(b) contacting said polypeptide with said candidate compound; and

(c) measuring ABC1-mediated lipid transport across said lipid membrane, wherein a change in lipid transport, relative to a control not contacted with said compound, indicates that said candidate compound modulates ABC1 biological activity.

58. The method of claim 49, 52, 53, 54, 55, or 57, wherein said ABC1 polypeptide is in a cell-free system.

59. The method of claim 49, 52, 53, 54, 55, or 57, wherein said ABC1 polypeptide is in a cell.

60. The method of claim 59, wherein said cell is from a WHAM chicken.

61. The method of claim 59, wherein said cell is in a human or in a non-human mammal.

62. The method of claim 61, wherein said animal is a WHAM chicken.

63. The method of claim 52, wherein said biological activity is transport of lipid or interleukin-1.

64. The method of claim 62, wherein said lipid is cholesterol.

65. The method of claim 64, wherein said cholesterol is HDL-cholesterol.

66. The method of claim 52, wherein said biological activity is binding or hydrolysis of ATP by the ABC1 polypeptide.

67. A method for determining whether a patient has an increased risk for cardiovascular disease, said method comprising determining whether an *ABC1* gene of said patient has a mutation, wherein a mutation indicates that said patient has an increased risk for cardiovascular disease.

68. A method for determining whether a patient has an increased risk for cardiovascular disease, said method comprising measuring ABC1 biological activity in said patient or in a cell from said patient, wherein increased or decreased levels in said ABC1 biological activity, relative to normal levels, indicates that said patient has an increased risk for cardiovascular disease.

69. A method for determining whether a patient has an increased risk for cardiovascular disease, said method comprising measuring ABC1 expression in said patient or in a cell from said patient, wherein decreased levels in said ABC1 expression relative to normal levels, indicates that said patient has an increased risk for cardiovascular disease.

70. The method of claim 69, wherein said ABC1 expression is determined by measuring levels of ABC1 polypeptide.

71. The method of claim 69, wherein said ABC1 expression is determined by measuring levels of *ABC1* RNA.

72. A non-human mammal comprising a transgene comprising a nucleic acid molecule encoding a dominant-negative ABC1 polypeptide.

73. A cell isolated from a non-human mammal comprising a transgene comprising a nucleic acid molecule encoding an ABC1 polypeptide having biological activity.

74. A method for determining whether a candidate compound decreases the inhibition of a dominant-negative ABC1 polypeptide, said method comprising the steps of:

(a) providing a cell expressing a dominant-negative ABC1 polypeptide;

(b) contacting said cell with said candidate compound; and

(c) measuring ABC1 biological activity of said cell,

wherein an increase in said ABC1 biological activity, relative to a cell not contacted with said compound, indicates that said candidate compound decreases the inhibition of a dominant-negative ABC1 polypeptide.

75. A method for determining whether a person has an altered risk for developing cardiovascular disease, comprising examining the person's ABC1 gene for polymorphisms, wherein the presence of a polymorphism associated with cardiovascular disease indicates the person has an altered risk for developing cardiovascular disease.

76. A method for predicting a person's response to a drug, comprising determining whether the person has a polymorphism in an ABC1 gene that alters

the person's response to said drug.

77. A method for predicting a person's response to a drug, comprising determining whether the person has a polymorphism in an ABC1 promoter that alters the person's response to said drug.

78. A method for altering ABC1 expression in a cell, said method comprising contacting said cell with a compound selected from a group consisting of fibrates, β-estradiol, arachidonic acid derivatives, WY-14,643, LTB4, 8(s)HETE, thiozolidinedione antidiabetic drugs, 9-HODE, 13-HODE, nicotinic acid, HMG CoA reductase inhibitors, and compounds that increase PPAR-mediated ABC1 expression.

79. A pharmaceutical composition comprising (i) a nucleic acid molecule that hybridizes under high stringency conditions to nucleotides 75 to 254 of SEQ ID NO: 2 and encodes a polypeptide having ABC1 biological activity; and (ii) a pharmaceutically acceptable carrier.

80. A nucleic acid that hybridizes under high stringency conditions to nucleotides 1 to 8236 of SEQ ID NO: 14.

81. A nucleic acid comprising a region that is 80% identical to at least thirty contiguous nucleotides of nucleotides 1 to 8236 of SEQ ID NO: 14.

82. A method for determining whether candidate compound modulates ABC1 biological activity, said method comprising the steps of:

(a) providing an ABC1 polypeptide;

(b) contacting said polypeptide with cholesterol and said candidate compound; and

(c) measuring binding of said cholesterol to said ABC1 polypeptide, wherein binding of said cholesterol to said ABC1 polypeptide indicates that said candidate compound modulates ABC1 biological activity.

83. The method of claim 82, wherein said cholesterol is HDL cholesterol.

84. The method of claim 82, wherein said method is performed in a cell free assay.

85. The method of claim 82, wherein said ABC1 polypeptide comprises amino acids 1 to 60 of SEQ ID NO: 1.

86. the method of claim 82, wherein said cholesterol or said ABC1 polypeptide is detectably labeled.

add C16

add D7

Add F3